

## ■ General Description

The AME4041 is a micropower 2-terminal band-gap voltage regulator diode. It operates over a 30µA to 20mA current range. Each circuit is trimmed at wafer sort to provide a ±0.5% initial tolerance. The design of the AME4041 allows for a large range of load capacitances and operating currents. The low start-up current makes these parts ideal for battery applications.

AME offers this part in a SOT-23 package.

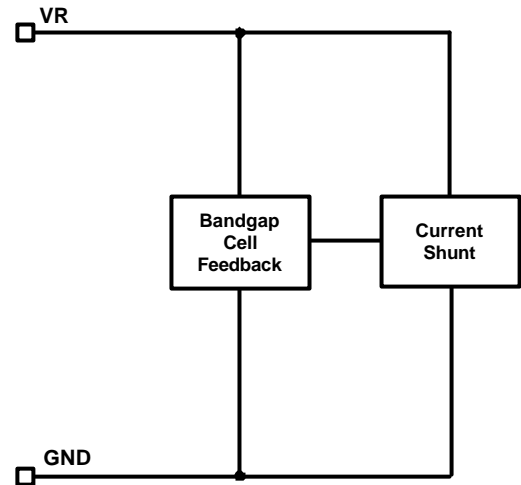
## ■ Features

- Small Packages: SOT-23
- Tolerates Capacitive Loads
- Fixed Reverse Breakdown Voltage of 1.225V
- Tight Voltage Tolerance ----- ±0.5%
- Wide Operating Current ----- 30µA to 20mA
- Wide Temperature Range ----- -40°C to +85°C
- Low Temperature Coefficient --100ppm/°C (max)
- Excellent Transient Response
- All AME's Lead Free Products Meet RoHS Standards.

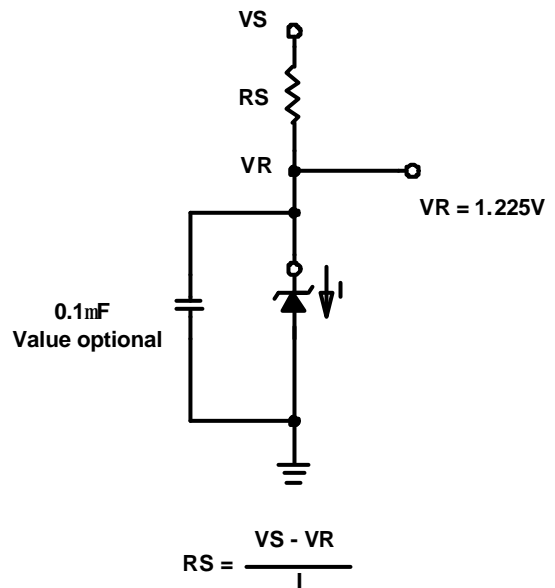
## ■ Applications

- Portable Electronics
- Power Supplies
- Computer Peripherals
- Data Acquisition Systems
- Battery chargers
- Consumer Electronics

## ■ Functional Block Diagram



## ■ Typical Application



**■ Pin Configuration**

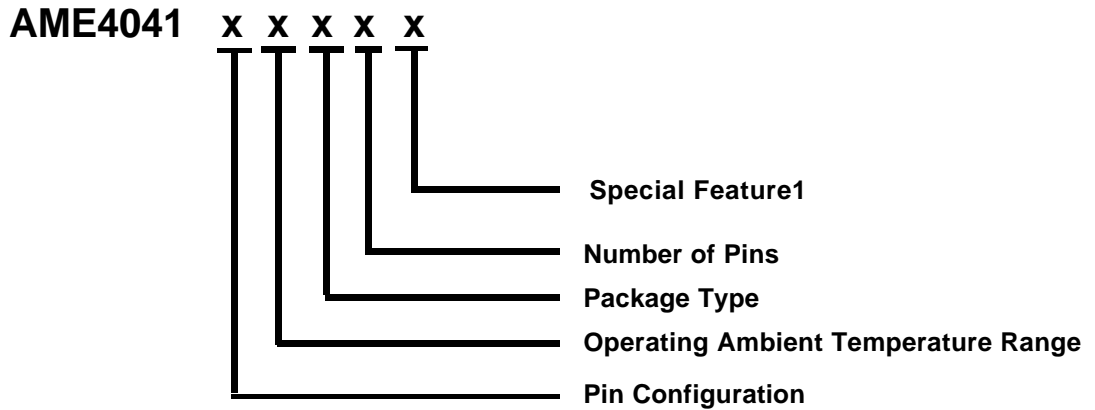
SOT-23  
Top View



**AME 4041**

1. +
2. -
3. NC\*

\* **Die Attach:**  
**Non-Conductive Epoxy**

**■ Ordering Information**


Accuracy	Operating Ambient Temperature Range	Package Type	Number of Pins	Special Feature1
A: 0.5% (SOT-23)	E: -40°C to +85°C	E: SOT-2X	T: 3	Z: Lead Free

**■ Ordering Information**

Part Number	Marking*	Accuracy	Package	Operating Ambient Temperature Range
AME4041AEETZ	ASNww	0.5%	SOT-23	- 40°C to +85°C

Note: ww represents the date code pls see the Date Code Rule on Package Dimension.

\* A line on top of the first letter represents lead free plating such as ASNww.

Please consult AME sales office or authorized Rep./Distributor for the availability of voltage accuracy and package type.

**■ Absolute Maximum Ratings**

Parameter	Maximum	Unit
Supply Current	50	mA

Caution: Stress above the listed absolute maximum rating may cause permanent damage to the device

**■ Recommended Operating Conditions**

Parameter	Symbol	Rating	Unit
Ambient Temperature Range	$T_A$	- 40 to +85	°C
Junction Temperature Range	$T_J$	- 40 to +125	°C
Storage Temperature Range	$T_{STG}$	- 65 to +150	°C
Supply Current		100 $\mu$ A ~ 20mA	

**■ Thermal Information**

Parameter	Package	Die Attach	Symbol	Maximum	Unit
Thermal Resistance* (Junction to Case)	SOT-23	Non-Conductive Epoxy	$\theta_{JC}$	140	°C / W
Thermal Resistance (Junction to Ambient)	SOT-23	Non-Conductive Epoxy	$\theta_{JA}$	280	°C / W
Internal Power Dissipation	SOT-23	Non-Conductive Epoxy	$P_D$	400	mW
Maximum Junction Temperature				150	°C
Solder Iron (10 Sec)**				350	°C

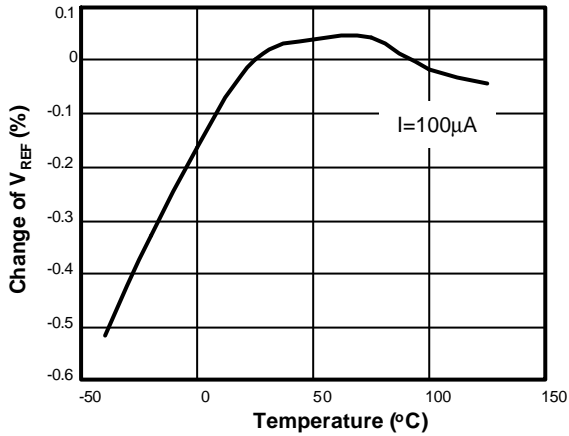
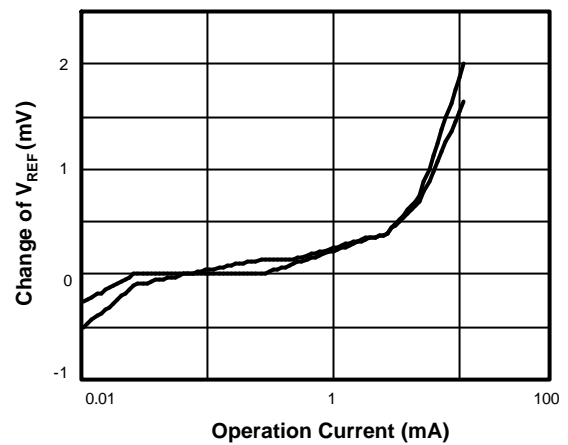
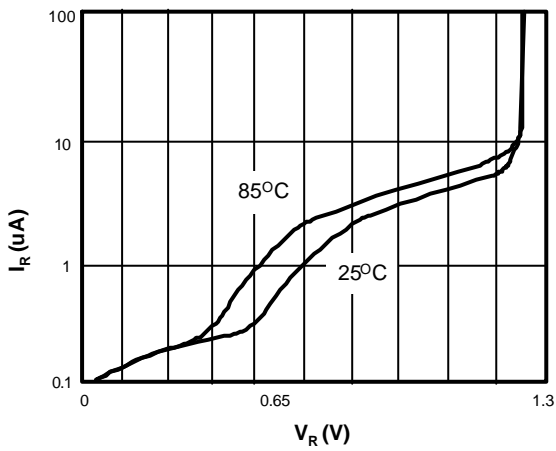
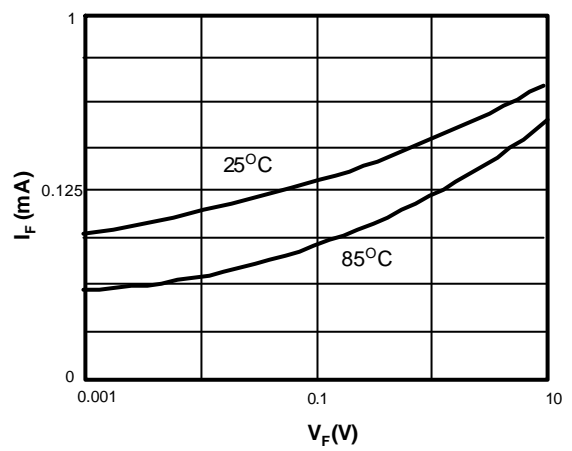
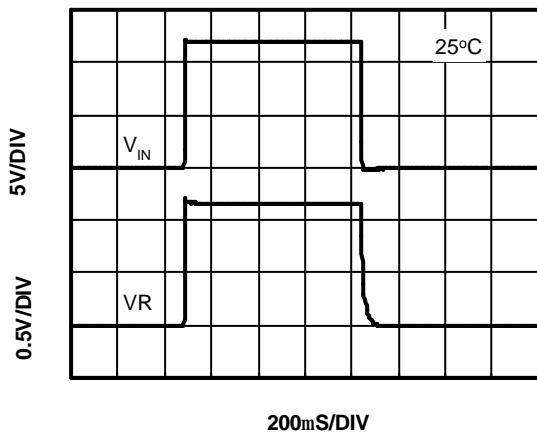
\* Measure  $\theta_{JC}$  on center of molding compound if IC has no tab.

\*\* MIL-STD-202G 210F

**■ Electrical Specifications**

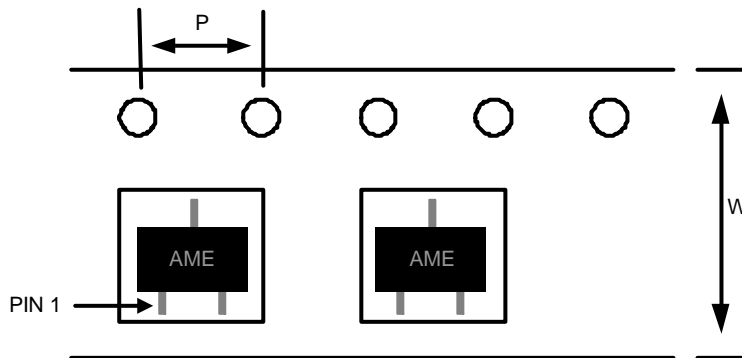
Unless otherwise specified,  $T_A = 0\text{--}70^\circ\text{C}$ ,  $I_R = 100\mu\text{A}$

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Reference Voltage, $\pm 0.5\%$	$V_{REF}$	$I_{REF} = 100\mu\text{A}$	1.219	1.225	1.231	V
Reference Voltage Change With Current	$dV_{REF/I}$	$I_{MIN} \leq I \leq 1\text{mA}$		1.5	3	mV
		$1\text{mA} \leq I \leq 20\text{mA}$		5	20	
Reverse Dynamic Impedance	RDI	$I_R = 100\mu\text{A}$ , $f = 20\text{Hz}$		1.5		Ohm
Wideband Noise (rms)	$V_n$	$I_R = 100\mu\text{A}$ , $10\text{ Hz} < f < 10\text{KHz}$		60		$\mu\text{V}$
Long term Stability		$I_R = 100\mu\text{A}$ , $T_A = 25^\circ\text{C}$ , $T = 1000\text{ Hours}$		20		ppm
Reference Voltage Temp. Coeff.	$V_{REFTC}$	$0^\circ\text{C} < T_A < 70^\circ\text{C}$		100		ppm/ $^\circ\text{C}$
Operation Current	$I_{OP}$		0.030		20	mA

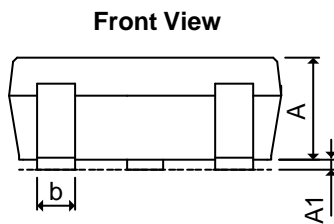
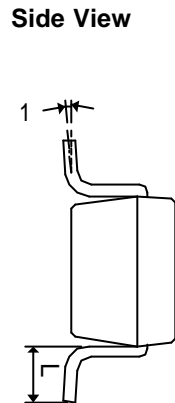
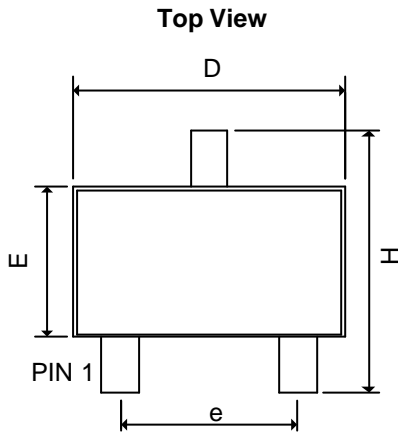
**■ Characterization Curve(For reference only)**
**Normalized Percentage Change vs. Temp.**

**Reference Voltage Change vs. Current**

**Reverse Characteristic**

**Forward Characteristic**

**Line Transient Response**


**■ Date Code Rule**

Marking			Date Code		Year
A	A	A	W	W	xxx0
A	A	A	W	<u>W</u>	xxx1
A	A	A	<u>W</u>	W	xxx2
A	A	A	<u>W</u>	<u>W</u>	xxx3
A	A	<u>A</u>	W	W	xxx4
A	A	<u>A</u>	W	<u>W</u>	xxx5
A	A	<u>A</u>	<u>W</u>	W	xxx6
A	A	<u>A</u>	<u>W</u>	<u>W</u>	xxx7
A	<u>A</u>	A	W	W	xxx8
A	<u>A</u>	A	W	<u>W</u>	xxx9

**■ Tape and Reel Dimension**
**SOT-23**

**Carrier Tape, Number of Components Per Reel and Reel Size**

Package	Carrier Width (W)	Pitch (P)	Part Per Full Reel	Reel Size
SOT-23	8.0±0.1 mm	4.0±0.1 mm	3000pcs	180±1 mm

**■ Package Dimension**
**SOT-23**


SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
<b>A</b>	1.00	1.40	0.0394	0.0551
<b>A<sub>1</sub></b>	0.00	0.15	0.0000	0.0059
<b>b</b>	0.35	0.50	0.0138	0.0197
<b>C</b>	0.09	0.25	0.0035	0.0098
<b>D</b>	2.70	3.10	0.1063	0.1220
<b>E</b>	1.40	1.80	0.0551	0.0709
<b>e</b>	1.90 BSC		0.0748 BSC	
<b>H</b>	2.40	3.00	0.09449	0.11811
<b>L</b>	0.35BSC		0.0138BSC	
<b>q1</b>	0°	10°	0°	10°





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